

R E P O R T R E S U M E S

ED 015 344

VT 004 448

ABSTRACTS OF RESEARCH STUDIES IN AGRICULTURAL EDUCATION
COMPLETED IN 1966-67 IN THE NORTH ATLANTIC REGION.

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PUB DATE NOV 67

EDRS PRICE MF-\$0.25 HC-\$2.08 50F.

DESCRIPTORS- *MASTERS THESES, *DOCTORAL THESES, *EDUCATIONAL
RESEARCH, *AGRICULTURAL EDUCATION, *ANNOTATED BIBLIOGRAPHIES,
NORTH ATLANTIC STATES,

FORTY-NINE DOCTORAL DISSERTATIONS, STAFF STUDIES, AND
MASTERS' THESES ARE REPORTED IN THE FOLLOWING AREAS --
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NEEDS, EMPLOYMENT NEEDS AND OPPORTUNITIES, EVALUATION,
INSTRUCTIONAL MATERIALS, INTERNATIONAL EDUCATION, PROGRAMS,
STUDENTS, TEACHERS, TEACHER EDUCATION, TEACHING METHODS,
YOUNG FARMERS, AND YOUTH CLUBS. THE PURPOSE, METHOD, AND
FINDINGS OF EACH STUDY ARE SUMMARIZED. THE STUDIES ARE
ARRANGED ALPHABETICALLY BY AUTHOR. (JH)

ED015344

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ABSTRACTS OF RESEARCH STUDIES IN AGRICULTURAL EDUCATION
COMPLETED IN 1966-67
IN THE NORTH ATLANTIC REGION

Submitted in the Format of
the Series Known as
Summaries of Studies in Agricultural Education

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for Distribution at the
North Atlantic Regional Seminar and Research Conference
Cornell University, Ithaca, N. Y.
November 8-10, 1967

VT004448

AMICK, TED E. Animated Slide Instruction and Non-animated Slide Instruction Compared for Effectiveness in Teaching Body Functions and Processes to High School Biology Students. Paper, M.Ed., 1967, The Pennsylvania State University. 57 p. Library, The Pennsylvania State University, University Park.

Purpose -- To compare the effectiveness of animated slide instruction and non-animated slide instruction in a unit on body functions and processes.

Method -- Multiple choice question tests were used as the criterion measure. Each test contained factual and conceptual questions. A pretest of knowledge of body functions and processes was used to control individual differences of the student.

Six schools in predominantly rural areas in north central and south central Pennsylvania were selected for the study. The animated slide and non-animated slide and tape recorded lecture instructional methods were taught in each school. The students were randomly assigned to each teaching method. A total of 711 students participated in the experiment.

The length of the experiment in each school was limited to two days. The pretest was administered the first day and the following day the instruction and the test were administered. Each student provided the following information: student sex, grade level, and enrollment status in a vocational agriculture program.

Findings -- Students learned from both animated and non-animated slide instruction. No significant difference in learning was found between the two methods of teaching. When the students' intelligent quotient scores were introduced as covariate no significant difference in learning was found between the two methods of teaching. No significant difference in student learning was found between the two methods of teaching when the students were classified according to each of the following: (1) grade level, (2) enrollment in vocational agriculture and nonenrollment in vocational agriculture, (3) sex. By personal observation, the investigator found that students given the animated slide methods were more alert and gave more of their attention to the presentation than those given the non-animated instruction.

AYERS, LEWIS C. The Development and Evaluation of a Unit of Instruction on Small Gasoline Engines. Thesis, M.Ed., 1967, The Pennsylvania State University. 93 p. Library, The Pennsylvania State University, University Park.

Purpose -- (1) To develop a teacher's unit plan on small gasoline engines, (2) To develop a student handbook on small gasoline engines, (3) To measure the subject matter knowledge gained in a course on small gasoline engines taught to selected vocational agriculture students, and (4) To compare selected factors concerning student residence, experience, age, and intelligence with test scores on a multiple choice test on small gasoline engines.

Method -- A teacher's manual and a student handbook on gasoline engines were developed. In addition, a forty-question multiple choice test and a student information sheet were used to collect the data. One hundred and thirty-seven vocational agriculture students in grades 10, 11, and 12, and twelve teachers of agriculture from Lancaster and York Counties participated in the study. Each vocational agriculture teacher involved in the study was instructed in the procedures to use for teaching the unit. Teachers also received instruction on the suggested tools and equipment for teaching the unit.

Findings -- The unit of instruction on small gasoline engines, including the teacher's manual and student handbook, was found to be an effective tool in teaching small gasoline engines to vocational agriculture students. Sixty-six per cent of the sample lived on farms, 28 per cent were rural non-farm, and 6 per cent were classified as having an urban residence. The mean I.Q. for the sample was 99.4. A mean total difference of 8.2 points was found between mean pretest and mean test scores. This difference was significant at the 1% level when analyzed by the correlated t test. Student achievement in the unit was not significantly affected by age, place of residence, experience level with small gasoline engines, or I.Q., as measured by pretest and test scores.

BAIL, JOE P. and WILLIAM H. HAMILTON. A Study of the Innovative Aspects of Emerging Off-Farm Agricultural Programs at the Secondary Level and the Articulation of Such Programs with Technical College Curriculum in Agriculture. Staff Study, 1967. 86 p. Agricultural Education Division, Cornell University, Ithaca.

Purposes -- The two major purposes of the project were: (1) To identify the innovative procedures and practices followed by schools in programs of agricultural business, agricultural mechanization, ornamental horticulture and conservation as they relate to objectives, curriculum content, pupil selection, facilities, work experience, organization and administration, advisory boards, and community acceptance. (2) To develop a plan for improved articulation of off-farm agricultural occupations programs at the secondary school and post-high school level as regards pupil selection, skill and competence level, curriculum content, and entry job level of respective groups.

Method -- Part I of the study was concerned with the assessment of innovative practices in emerging off-farm agricultural occupations training programs in agricultural business, agricultural mechanization, conservation, and ornamental horticulture. Ten high schools in New York and Connecticut were selected.

Interviews in each of the districts were conducted to identify successful innovative practices and assess their importance. Teachers, administrators, guidance persons, school board and advisory board members, employers and parents were the respondents.

Part II of the study was concerned with the articulation between the emerging high school programs and similar programs in the agricultural and technical colleges.

The method used in the study consisted of two one-day conferences with agricultural and technical college professors, high school teachers and four-year college representatives. In addition, curriculum materials currently in use were provided participants from both levels, as well as visits to the centers to confer with persons involved in the programs.

Findings -- Some important common characteristics of successful innovative programs included: careful and detailed pre-planning of all phases of the program, use of State Department of Education personnel in initiating the programs, high degree of concern for on-the-job work experiences, provision of adequate facilities, continuing efforts to inform the public, and use of teacher specialization. A series of guidelines was developed for initiating such programs.

The guidelines for improved articulation include proper attention to such matters as program titles and objectives, qualifications for entry, checklist of skills and abilities needed in specific job titles, opportunity for work experience, recognition of previous educational training in the specialized field, and adequate guidance and counseling of students in the program. The opportunity for high school and post-high school instructors to meet regularly to discuss common concerns and program developments was unanimously agreed upon as an essential element of good articulation.

BEEHAN, CARL E. Perceptions of School Administrators, Vocational Agriculture Teachers, and Members of the Lay Public Concerning the Changing Role of Vocational Agriculture in Mississippi. Thesis, Ed.D., 1967. Cornell University. 143 p. Division of Agricultural Education, Cornell University, Ithaca.

Purpose -- The major purpose of the study was to compare the opinions of the three respondent groups concerning the role of vocational agriculture in Mississippi in each of the following areas of both the in-school and out-of-school programs: clientele to be served; organizations to be advised or served; instructional program to be offered; and principles of organization and administration to be followed.

Method -- A comprehensive list of statements regarding the role of vocational agriculture was incorporated into a questionnaire. A jury was used to obtain suggestions for further refinement after which it was field tested. A random sample consisting of 20 per cent of all the schools in Mississippi that offered vocational agriculture, stratified on the basis of geographic regions of the state and by groups according to student enrollment was taken. The respondents consisted of the school administrator, the vocational agriculture teacher(s), and four members of the lay public from each school selected.

Respondents checked SA, strongly agree; A, agree; U, undecided; DA, disagree; and SDA, strongly disagree for each statement.

The statistical test used to determine significance was chi square, computed on the IBM 1620, Model II computer following a FORTRAN program. The level of significance was set at the .05 level of probability.

Findings -- There was significant disagreement among the opinions of school administrators, vocational agriculture teachers, and members of the lay public concerning the role of vocational agriculture in Mississippi in four areas of the in-school program. Two of the four areas, clientele to be served and principles of organization and administration to be followed, of the out-of-school program also showed significant disagreement. However, there was a consensus of opinion, represented by a majority of the respondents in all three groups, regarding the role of vocational agriculture with sixty-two of the sixty-four statements presented. The majority of administrators did not agree that vocational agriculture teachers should be released from school duties by 1:00 p.m. each day to give on-farm supervision. The majority of agriculture teachers did not agree that they should sponsor or otherwise be as involved with extra-curricular youth organizations in the high schools as are other teachers.

Specific conclusions were drawn in each of the four areas of both the in-school and out-of-school programs, indicating the role of vocational agriculture in Mississippi as perceived by school administrators, vocational agriculture teachers, and members of the lay public.

BLOSS, NORMAN F. Work Experience in the New York State College of Agriculture. Thesis M.S., 1967, Cornell University. 110 p. Library, New York State College of Agriculture, Cornell University, Ithaca.

Purpose -- The primary purpose was to present a comprehensive and meaningful picture of available opinion concerning the concept of work experience education at the college level as exemplified by the student practice program of the New York State College of Agriculture.

Method -- The study was conducted in three phases. An extensive review of literature was conducted over a period of one year. Seventy-four land-grant and state colleges of agriculture were surveyed by letter concerning the existence of experience programs in those institutions. Questionnaires answered by 263 faculty members and 220 students of the New York State College of Agriculture were analyzed using chi-square tests of frequency distribution and HSD tests of mean differences.

Findings -- Neither the literature, the officials of the various colleges of agriculture, nor those answering the questionnaires presented any argument against the contention that a program of work experience education can be of considerable value to many students. The concern with the appropriateness of such a program centers almost entirely around administrative problems.

There was evidence from all three sources that the primary value to be derived from a program of the type that exists at the New York State College of Agriculture is that the program enables students to explore occupational fields in which they have an interest and helps them to determine the suitability of those fields.

The evidence appears to justify the continuation of the work experience program at the New York State College of Agriculture although a majority of the faculty and students who responded indicated that the program should be operated on a voluntary basis. It appears that an improvement in the quality of the jobs involved, more consideration of student finances as affected by the program, and increased emphasis in the direction of general educational goals such as vocational exploration and personal maturation are important factors in determining the worth and future of the program.

BROWN, WILLIAM J., JR. The Effect of Inservice Education and Resource Unit Components on Teacher and Student Learning. Thesis, D.Ed., 1967, The Pennsylvania State University. 123 p. Library, The Pennsylvania State University, University Park.

Purpose -- The purposes were (1) to develop a resource unit in dairy cattle nutrition suitable for teaching high school sophomores and (2) to determine the effectiveness of an inservice teacher education course and of furnishing teachers with different components of a resource unit as teaching aids.

Method -- Forty teachers of agriculture and 438 high school sophomores were involved in a teaching experiment. Half of the teachers attended an inservice education course; the other half did not. The inservice education course consisted of six, two and one-half hour weekly classes on dairy cattle nutrition. Teachers in each inservice education group were randomly assigned to a resource unit component treatment. Resource unit components were (1) Course Outline only, (2) Course Outline and Teachers' Unit Plan, (3) Course Outline and Student Handbook, and (4) Course Outline, Teachers' Unit Plan, and Student Handbook.

Separate multiple-choice achievement tests were used to measure teacher and student learning. Teachers in the Inservice Education Group were pre-tested before the inservice education course, tested after the course, and retested after teaching the unit to their sophomore students. Teachers in the No Inservice Education Group were tested before teaching the unit to their students and retested afterwards. Students were tested before and after the unit of instruction. Differences in test scores between the inservice education treatments and among the resource unit component treatments were tested for significance by analysis of covariance. Increases in teacher and student test scores were tested for significance by correlated t-test.

Findings -- The difference in cognitive knowledge, as measured by test scores, between teachers in the two inservice education treatment groups was significant both after the inservice education course and after the unit was taught to high school sophomores. Inservice teacher education did not significantly affect the subsequent learning of the teacher's students. All students made significant increases in test scores.

Teachers who used the Course Outline and Student Handbook to instruct their students had higher test scores after teaching the unit than teachers who used the Course Outline only. When the test scores of teachers in the Inservice Education Group were analyzed separately, there were no significant differences among resource unit components. However, there were significant differences among resource unit components for the No Inservice Education Group. Teachers who used the Course Outline and Student Handbook scored significantly higher on the test than teachers who were furnished either the Course Outline alone or the Course Outline and Teachers' Unit Plan. There were no differences in the effect of resource unit components on the cognitive learning of students, as measured by test scores.

BUCK, CHARLES W. Principles for the Development of an Orientation Program for Summer Off Campus Work-Study Aids. Staff Study, 1967, University of New Hampshire. 18 p. Agricultural Education Program, University of New Hampshire, Durham.

Purpose -- To identify organization of principles which could be applied to the orientation program of the Summer Work-Study Aid.

Method -- The biweekly narrative and statistical reports of the work-study aids were reviewed and evaluated from the point of view of orientation to the job.

The interview technique was utilized to ascertain strengths and weaknesses of the orientation program from both the aids' and supervisors' standpoints.

Findings -- Seven areas of concentration were identified for an orientation program for summer work-study aids.

These areas include:

1. Group Theory and Organization
2. Communications with the Clientele
3. Understanding Developmental Tasks
4. Public Relations
 - a. News stories
 - b. Instructional materials
 - c. Circular letters
5. Program Planning
6. Time Organization
7. Professionalism

BURGETT, DONALD C. Writing a Unit of Programmed Instruction and Determining its Effectiveness. Thesis, M.S., 1967. Cornell University. 164 p. Department of Agricultural Education, Cornell University, Ithaca, New York.

Purpose -- The overall purpose was to create a programmed unit for use by teachers of agriculture and to evaluate its effectiveness in causing students to achieve the desired objectives of the unit.

Method -- A program was developed for the unit Taking a Farm Inventory after reviewing the literature to find a suitable format for making a program. The program was tested four times by various means and revised after each test according to the results of the test. The fifth draft was then printed and sent to 332 agriculture students in 31 schools in New York State. Data for evaluating the program were obtained from pretests, posttests and questionnaires.

Findings -- The students involved were able to achieve higher scores on the posttests than they did on the pretests. However, the achievement was greater for some instructional objectives than others. At least nine of the seventeen instructional areas are in need of revision.

The reaction of students and teachers to programmed instruction generally is a favorable one. The characteristics associated with programmed instruction tend to make it interesting and helpful to the student using it.

The present programmed unit Taking a Farm Inventory should be combined with some other teaching method to assure achievement of all the instructional objectives.

CAREY, HARRY A., JR. The Effectiveness of Colored Slides and Script for Teaching Rural Fallout Protection to High School Agriculture Classes and 4-H Clubs. Paper, M.Ed., 1967, The Pennsylvania State University. 68 p. Library, The Pennsylvania State University, University Park.

Purpose -- The primary objective of this study was to develop an effective set of colored slides and script for use in teaching fallout protection to rural youth groups. The slides and script were developed for use by educators who are inadequately informed about fallout protection subject matter.

Method -- The script was prepared to include the effects of nuclear weapons, the principles of fallout protection, and family and farm preparedness. Sixty-one slides were developed as visual aids in those areas of the subject matter that were difficult to explain verbally. The unit of instruction was divided into four equal segments with 15 slides in each segment. The program was presented by the investigator to 230 rural youth in six agriculture classes and six 4-H Clubs. Three groups, each including two high school agriculture classes and two 4-H Clubs, received the entire verbal presentation, but the number of slides shown was regulated. Group A was shown only the slides for segments one and three; group B was shown only the slides for segments two and four; and group C was shown all the slides.

The criterion measure was a thirty-two item multiple-choice test with eight items for each of the four segments of the presentation. Mean test scores from the segments supplemented with slides were compared to mean test scores for segments without slides. Total mean test scores of the groups which were shown one-half the slides were compared with mean test scores of the group which was shown all the slides. Statistical treatment included analysis of variance and Duncan's Multiple Range Test.

Findings -- The findings of this study indicate that greater learning had taken place when the colored slides accompanied the verbal presentation. Mean test scores on the segments where slides were used were significantly higher, at the .01 level, than where slides were not used. The total mean score for the group which was shown all the slides was significantly higher, at the .05 level, than were the total mean scores for the groups which were shown only one-half of the slides. By observation it was found that student interest was also greater when the slides were being used.

CESSNA, CECIL P. Agricultural Mechanics Skills Needed by Employees in Six Selected Off-Farm Agricultural Occupations. Paper, M.Ed., 1967, The Pennsylvania State University. 79 p. Library, The Pennsylvania State University, University Park.

Purpose -- (1) To identify the areas of agricultural mechanics related to training needed for employment in off-farm agricultural occupations, (2) To determine the mechanical skills presently being taught in agricultural production that contribute to the training of prospective employees for off-farm agricultural occupations, and (3) To develop a list of mechanical skills which could be taught in high school vocational agriculture programs for training prospective employees for off-farm agricultural occupations.

Method -- Three agricultural occupational families were selected in Adams and Franklin Counties. The occupational families were selected on the basis of the greatest need for employees possessing agricultural competencies to be hired during the next five years. The three occupational families included: (1) Agricultural Machinery Sales and Service, (2) Agricultural Supplies and Equipment, and (3) Ornamental Horticulture. Two job titles and two employees within each job title were selected from each of the three occupational families. The twelve employees were personally interviewed and asked to rate 102 mechanical skills as to the degree of need for entering and advancing in their respective job titles. Employees were also asked to respond to questions of general information, training preference, inservice training and instruction received since high school graduation. Nineteen teachers of vocational agriculture in Adams and Franklin Counties were asked to rate the 35 skill groups as to the need for entering the selected job titles.

Findings -- Basic mechanical skill needs common to agricultural production and off-farm agricultural employees were identified. Skill groups rated highest by both the teachers and employees included: hand tools, internal combustion engines, and planting equipment. Individual skills rated highest by the employees included: adjust, sharpen and maintain tools; use hand tools; lubricate, service and maintain engines; safely operate tractors; select, use and maintain hydraulic cylinders and rams; select, operate, adjust and maintain field sprayers.

Certain agricultural occupations required similar basic mechanical skills. Seventy-two of the 102 skills were rated by the machinery salesman and mechanics as having a need of 1.0 or higher using the 4, 3, 2, 1, or 0 rating scale. The product salesmen and delivery truck drivers rated only 21 of the skills as having a need of 1.0 or above, whereas the nursery workers and groundskeepers rated 52 of the 102 individual skills as having little or higher need, a mean score of 1.0 or above, for entering and advancing in their respective job titles.

CRAIG, DAVID GEORGE. Developmental Aspects of Off-Farm Work Experience in Vocational Agriculture in New York State. Thesis, Ed.D., 1967, Cornell University, 281 p. Agricultural Education, Cornell University, Ithaca, New York.

Purpose -- The purpose of the study was to develop a work experience model that would provide direction, a philosophy and some guidelines for an agricultural occupational experience program. General and specific responsibility areas would be identified for teachers of agriculture and agricultural business employers in order to implement an agricultural occupation program.

Method -- The instruments used in the study were questionnaires, initiated and structured following the outline of general and specific teacher and employer responsibilities. They were field tested and revised as two separate questionnaires for teachers and employers. They were designed to assist in gathering the following information from teachers and employers: the identification of concerns and expectations listed in the questionnaire; the amount of importance placed upon each concern and expectation, and additional or other concerns and expectations.

Of the teachers of agriculture in New York State, 31 were selected who taught unit courses in agricultural mechanization, agricultural business and ornamental horticulture in Board of Cooperative Educational Services (BOCES) school districts. Each teacher was asked to select two employers in the larger businesses in his district who might cooperate in employing students for work experience.

The questionnaire was administered by the author to the 31 teachers of agriculture and 62 agricultural businessmen. The concerns of teachers and employers were tabulated according to individual responsibilities in conducting work experience. The expectations were tabulated according to general areas of responsibility in conducting work experience. A structured questionnaire was used with closed and open ended questions to identify concerns and expectations and personal interviews utilized a detailed orientation.

Findings -- A proposed model for work experience in vocational agriculture was identified as a result of the survey and the synthesizing of various important aspects of the literature in general and vocational education. The model emphasizes the importance of: (1) student preparation for entry into gainful employment in an agricultural occupation, (2) student practice of knowledge, skills and attitudes, and (3) work experience as an organized and supervised process of learning experiences.

Responsibilities indicated by teachers and employers were compiled into a tentative list of general and specific tasks for implementing the proposed work experience model in vocational agricultural departments and off-farm agricultural businesses in New York BOCES school districts. The tasks involving student characteristics related to student selection are of greatest concern to teachers and employers. In placing students, teachers have the most concerns when locating and selecting businesses. As to orienting students, employers have the most concerns when planning the work experience with students. It is evident that observing students at work and following up initial on-the-job training are responsibilities of greatest concern for teachers and employers respectively when supervising students in work experience.

The study indicated that teachers have more concerns than employers because they have more responsibilities which, in turn, result in more concerns.

There was a close relationship between the number of teachers and employers identifying concerns and expectations and the amount of importance placed on these items.

CUNNINGHAM, RAYMON. Current and Future Needs For Vocational Education in Jackson County. Thesis, M.S., 1967, West Virginia University. 91 p. Library, West Virginia University, Morgantown.

Purpose -- To determine current and future needs for vocational education in Jackson County with implications for use in planning and implementing expanded programs of vocational education as an addition to the present school curriculum.

Method -- Data for this study were obtained through questionnaires administered to high school students in grades nine through twelve in the two county schools, information forms sent to a selected group of parents, and questionnaires administered to employers who employed one or more persons. Other data were collected by means of research of pertinent records on file in the office of the County Board of Education and other state and local records which were relevant to the employment of the study in regard to current trends in educational norms and the current and projected employment situation.

Findings -- The findings revealed: (1) an increase in county school population with a substantial decrease in the number of withdrawals, (2) sixty-seven and eight-tenths per cent of the county high school graduates do not enter college, (3) ninety and one-tenth per cent of the students indicated an interest in occupations for which adequate training could be provided through quality programs of vocational education; with seventy per cent expressing a definite interest in vocational education training, (4) one hundred per cent of the student population responded favorably to vocational education, (5) an estimated increase of 100 to 175 annually in the secondary school enrollment, (6) the existence of 485 employment opportunities within the immediate area and numerous other possibilities in surrounding areas point up the availability of employment opportunities for those who are adequately prepared to fill these positions and, (7) the five courses of vocational education instruction in which the students revealed the most interest -- greenhouse production, vocational business education, auto mechanics, practical nursing, and homemaking.

CURTIS, SAMUEL M. Effectiveness of Simulation in Teaching Farm Business Analysis to High School and Adult Students. Thesis, D.Ed., 1967, The Pennsylvania State University. 140 p. Library, The Pennsylvania State University, University Park.

Purpose -- To evaluate a farm business simulation model used for teaching farm business analysis and record keeping to high school and adult students. Comparisons were made among instructional methods to assess student learning of decision skills and subject knowledge.

Method -- A computer simulation model was developed. The model focused attention on the decision skills pertaining to a knowledge of economic principles. A student resource handbook and a teacher's guide, Farm Business Analysis and Record Keeping, were written. The problem areas in the handbook were: (a) budgetary analysis and linear programming, (b) how to measure farm business efficiency, (c) how to value farm inventory, (d) how to keep financial records and (e) how to keep production records.

Five in-service teacher education classes were taught. The simulation model and the resource unit were used to: (a) upgrade the teachers' subject-matter knowledge, (b) acquaint teachers with simulation and (c) control for teacher differences.

Five instructional methods used with high school students were: (a) resource unit alone, (b) simulation model alone, (c) combination of resource unit and simulation model, (d) course outline only and (e) control -- same as "d" except teachers did not receive in-service education. Adult classes were taught by the first three methods. Twenty-five teachers taught high school classes and eight teachers taught adult classes. The teachers were randomly assigned to the experimental methods of instruction except for the five teachers in method "e."

Student learning was measured with a decision-ability test and a subject-matter test. Class mean test scores were analyzed by covariance to test for differences among instructional methods.

Findings -- The decision-ability test scores of the high school classes were not significantly different among the five methods of instruction. The subject-matter test scores of the high school classes were not significantly different among the five methods of instruction. Where used for teaching high school classes, the simulation model was equally as effective as the other methods of instruction. No differences were noted between the classes taught by the control method and the classes taught by the experimental methods.

The decision-ability test scores of adult classes taught by the combination of resource unit and simulation model method were significantly higher than the scores of the adult classes taught with the resource unit only method. There were no differences between the simulation and the combination of simulation and resource unit methods of instruction. The subject-matter test scores of adult classes were not significantly different among the three methods of instruction. The combination of simulation and resource unit method was superior to the resource unit only method when adult learning was measured with the decision-ability test. When adult learning was measured with the subject-matter test, the simulation method and the combination method were equally as effective as the resource unit only method.

Adult students scored higher than high school students on both tests. The increase over pretest was also greater for the adult learner. This may indicate that farm business analysis and record keeping instruction can be taught more efficiently to adults.

DECKMAN, DONALD E. Development of an Ornamental Nursery Plan for Schools. Paper, M.Ed., 1967, The Pennsylvania State University. 77 p. Department of Agricultural Education, The Pennsylvania State University, University Park.

Purpose -- To develop and evaluate (1) a list of essential plants for a secondary school horticultural nursery, (2) a list of essential tools, equipment and machinery needed in the school horticultural nursery with equipment specifications, (3) a school nursery design including propagating greenhouse space, nurse bed space, cold frame, and field stock space.

Method -- Selected horticulturists, landscape architects, landscape nurserymen, and nurserymen located in an eighteen-county area of Zone 5 were surveyed for this study. These four select groups were sent questionnaires with a list of 108 plants. The plants were rated by a scale of: 3 - greatly used, 2 - moderately used, and 1 - rarely used. Under each category of plants, the individuals surveyed had an opportunity to write in other plants of importance. The plant list was based on plant importance as found in a landscape adequate for the teaching of competencies in plant growth characteristics, plant identification and cultural practices.

Landscape nurserymen and nurserymen were sent additional questionnaires with a list of 36 tools and equipment. The tools were rated by a scale of: 3 - essential, 2 - desirable, and 1 - not necessary. Under each category of tools the individuals surveyed had an opportunity to write in other tools of importance. The tool list was based on tools necessary for adequate operation and maintenance of a school nursery.

Personal interviews were the basis for the school nursery layout and design. In order to collect ideas on school nursery arrangement and to evaluate the relationship between greenhouse space, cold frames, baby bed area, and acreage of finished nursery stock, the author selected a list of well-established reputable nurserymen in the eighteen-county area and made visitations to their nurseries.

Findings -- Of the 108 plants rated, 76 plants received a score of 2.0 or better. On the basis of the ratings, 32 plants were deleted from the essential plant list. The four groups completing the ratings added 34 new plants to the list.

All of the 36 items of equipment rated received a score of 2.0 or better. The groups doing the ratings added nineteen items of equipment to the list.

After visiting four nurseries, the nursery design and layout recommended included four basic areas. A one-acre school nursery lot, based on the mean spacing requirements, will hold approximately 5,200 plants, at an approximate cost of \$7,000 for liner plant material.

DEROGONGAN, MACAUROG B. Problems in the Local Administration of Agricultural Schools in the Philippines. Thesis M.S. 101 p. 1967, Cornell University, Ithaca, New York.

Purpose -- This study was conducted (1) to discover the problems commonly faced by agricultural school administrators in the Philippines and (2) to determine the opinion of the respondents on how to solve their most important problems.

Method -- Questionnaires were used in collecting data for this study. Questionnaires were mailed to 83 agricultural school administrators in the Philippines through the Director of the Bureau of Vocational Education. 63 or 76% of the total study population responded favorably.

Findings -- Seventy-three per cent of the respondents earned their bachelors degree, one with an Ed.D. degree, while the remainder of the group hold one of three kinds of masters degree -- M.A., M.S., and M.Ed.; 73% earned their degrees from the University of the Philippines College of Agriculture while the rest studied elsewhere. Fifty-five per cent of the school administrators have been administrators of agricultural schools for six years or less.

Eleven areas of responsibility of a school administrator in the Philippines were considered in this study: (a) staffing, (b) assignment of teachers, (c) recruiting teachers, (d) selecting enrollment, (e) handling discipline, (f) providing facilities, (g) graduate placement, (h) obtaining finances, (i) public relations, (j) in-service training, and (k) improving instruction. The respondents reported the following most important problems: (a) increasing faculty and other staff members' salaries and hiring qualified teachers and other staff members, (b) eliminating teaching overloads, (c) acceptance of students not interested in agriculture, (d) unexcused absences and abuse of school equipment, (e) providing funds for equipment, implements and animals and providing sufficient rooms, (f) providing funds for the procurement of instructional materials, (g) locating potential employers, (h) contacting parents and promoting publicity, and (i) providing funds and time for in-service training.

The following were reported by the respondents as the sources of funds for the operation and maintenance of agricultural schools: (1) national appropriation, (2) tuition fees, (3) school production income, (4) savings. Sixty-eight per cent of the school administrators reported the greatest need was for more funds.

EVANS, DONALD E. Characteristics and Performances of Agricultural Drop-outs at The Bellwood-Antis High School. Paper, M.Ed., 1967. The Pennsylvania State University. 56 p. Library, The Pennsylvania State University, University Park.

Purpose -- To determine the characteristics and performances of agricultural students who drop out of school and thus enable a teacher to identify potential drop-outs. Four major objectives were: (1) to compare agricultural graduates with graduates of four other curriculums, (2) to compare the per cent of drop-outs in the agricultural curriculum with that of four other curriculums, (3) to compare agricultural graduates with non-graduates, and (4) to determine other characteristics and performances that are common among non-graduates of agriculture.

Method -- The sample included all students who entered the ninth grade during or after the school year of 1958-59 and who withdrew prior to June 1966 or were graduated at that time. Data were collected on 573 students. The data were obtained from records on file at the high school, from the guidance counselor, and from the drop-outs or their parents.

Findings -- Graduates enrolled in the five curriculums did differ by IQ, extra-curricular activity participation, subjects failed, achievement test scores, reading ability, and grades achieved.

A comparison of the per cent of drop-outs per curriculum indicated that there were meaningful differences. However, the mean per cent of drop-outs for all curriculums was lower than the Pennsylvania average.

The comparison of agricultural graduates and non-graduates indicated that the graduates had higher IQ levels, better high school grades, slightly better per cent attendance, better extra-curricular activity participation, and were from families with fewer children, had parents with higher level educational backgrounds, and the rural farm students were by far the better students.

The analysis of agricultural drop-outs indicated that they usually withdraw from school because they are over seventeen or because they experience academic failure. After withdrawal, they have difficulty finding good jobs and experience plenty of job hopping. The drop-out made little effort towards self-improvement.

GINGERICH, GARLAND E. The Development and Evaluation of a Unit of Instruction on the Safe Handling of Pesticides. Paper, M.Ed., 1967, The Pennsylvania State University. 29 p. Library, The Pennsylvania State University, University Park.

Purpose -- To develop and evaluate a teacher's unit plan and a student handbook on the Safe Handling of Pesticides.

Method -- With the aid of resource materials and specialists in the field a teacher's unit plan and a student handbook were developed. The teacher's plan included resources and suggested teaching methods for each of five problem areas. The student handbook supplemented the teacher's unit plan with subject matter students needed to know.

The unit of instruction was completed by 165 ninth grade students of vocational agriculture in nine high schools in York County and Lancaster County, Pennsylvania. Teachers used various means of presenting the lessons including lecture, discussion, field trips, and the use of resource persons and visual aids. Each teacher taught the unit in 10 class periods.

Findings -- Students knew more about practices in the safe handling of pesticides as a result of studying the student handbook. Their test scores increased from 10.1 to 16.1. A positive correlation of .517 significant at the .01 level was found between pretest and test scores of the total number of students.

Student I.Q. and reading ability correlated with pretest and test scores. Place of residence, number of pesticides used at home and previous experience did not influence the test scores.

There were but 34 per cent of the pesticides stored safely on the home farms of the 165 students before the unit was taught. After instruction the students reported 37 per cent stored safely.

It was concluded that the instruction unit was effective and a recommendation was made that the materials be revised and published. With adults as well as with high school students the teaching time can be increased.

GOODWIN, WALTER BRUCE. Organizing and Using Advisory Councils In and Through Vocational Agriculture. Problem, M.S., 1966, West Virginia University. 42 p. Library, West Virginia University, Morgantown.

Purpose -- This study was undertaken in the belief that vocational agriculture teachers need to improve their vocational agriculture departments by properly organizing and using advisory councils. If the teacher of vocational agriculture understands the purposes and the needs for having an advisory council, he will soon establish one. This study was designed to develop a plan or guide to follow in the organization and use of an advisory council on the local level.

Method -- Data and information in this study were obtained from textbooks, periodicals, annuals, special topics in agricultural education, and other literature of professional organizations.

Findings -- The findings in this study show that if a council is to be organized and properly used:

- (1) Vocational agriculture teachers must be "sold" on the use of advisory councils.
- (2) Vocational agriculture teachers must know the needs and purposes of advisory councils.
- (3) Vocational agriculture teachers must help to "sell" the use of advisory councils to the school administration and board of education.
- (4) A nominating committee must present a list of nominees to the board of education for their selection.
- (5) The superintendent of schools should notify the new members of their selection.
- (6) An advisory council is to advise, not to administrate.
- (7) Advisory councils provide an excellent means for promoting good relations between the department and the community.
- (8) The vocational agriculture teacher is the advisor to the council.
- (9) Advisory councils must be kept busy with a well-planned and useful program.
- (10) Advisory councils should be rewarded.
- (11) The administration should be represented on the council in an ex-officio capacity.
- (12) The vocational agriculture teacher may be elected as secretary.
- (13) Council should make use of consultants.
- (14) The vocational agriculture teacher should never be the chairman of the advisory council.
- (15) The advisory council will be only as good as the vocational agriculture teacher.
- (16) The success of the advisory council depends upon the initiative, vision and tact of the teacher, as well as the members of the council.

GRIFFITH, ELLIS J. Factors Related to Methods of Financing and Cost of Owning a Forage Harvester on Farms in Huntingdon County. Paper, M.Ed., 1967, The Pennsylvania State University. 34 p. Library, The Pennsylvania State University, University Park.

Purpose -- To determine the method of financing and factors considered before the purchase of a forage harvester by farmers in Huntingdon County. The factors under consideration were (1) to determine what influenced farmers to invest in their present forage harvester, (2) to determine the number of forage harvesters that were driven by power take-off or auxiliary engines, (3) to find the relationship between gross income and methods used to finance the harvester, (4) to identify the relationship between age of the forage harvester and nature of repairs required as well as the annual cost of repairs, (5) to determine the average purchase price, annual depreciation, and present value of the forage harvesters included in the survey.

Method -- A schedule was devised to reveal factors that received the farmer's attention prior to investing in a forage harvester. The survey was taken in Huntingdon County by two D.H.I.A. supervisors and four teachers of agriculture in cooperation with the writer. Forty dairy farmers, randomly selected, provided the information needed.

Findings -- (1) Labor shortage, was the greatest single factor that caused farmers to invest in a forage harvester. Additional influence indicated by some farmers were a machinery dealer, adoption of a complete silage program, desire to harvest at a proper time, and the persuasion of a son or wife; (2) The local bank was the most widely used source for financing forage harvesters, however, other methods used in some instances were cash, machinery dealer, or a combination of the previous methods; (3) Forage harvesters purchased new had a higher annual depreciation, but a lower annual repair cost, than used machines; (4) Replacement of bearings was the most frequent repair work done on the forage harvesters.

GUTSHALL, VIRGIL E. Development and Evaluation of a Unit of Instruction in Hydraulics for High School Vocational Agriculture Students. Paper, M.Ed., 1967, The Pennsylvania State University. 103 p. Library, The Pennsylvania State University, University Park.

Purpose -- To develop and evaluate a unit of instruction on the principles of operation and maintenance of hydraulic systems for agricultural equipment.

Method -- The course in the principles of operation and maintenance of hydraulic systems for agricultural equipment was taught in five schools by teachers of agriculture. Ninety-eight students completed the course. There were 33 tenth grade students, 40 eleventh grade students, and 25 twelfth grade students. The method of instruction and instructional materials was the same for each school. Each teacher pretested his students with a 20 question multiple-choice test. Students were post-tested with the same test. Students completed an information sheet concerning age, grade, residence, and level of experience in operation, maintenance and repair of hydraulic equipment.

Findings -- The teacher's unit plan and student handbook of subject matter were effective tools in teaching hydraulics to 10th, 11th, and 12th grade students, as measured by the achievement test. Students in all grades, in all schools made significant gains in test scores. The learning capacity of students in the three grades apparently was not different. Students with more maintenance experience in hydraulic equipment scored significantly higher on the test than those without experience.

Twenty students had no operational experience in hydraulics, 47 had some experience, and 31 had much experience. Fifty-eight students had no maintenance experience and 40 had some maintenance experience. Seventy-two students had no experience in the repair of hydraulic equipment and 26 had some repair experience.

HARRIS, OSCAR JAMES. An Investigation of Some Needs For Expansion of Vocational Education in Monongalia, Preston, and Taylor Counties, West Virginia. Thesis, M.S., 1966, West Virginia University. 67 p. Library, West Virginia University, Morgantown.

Purpose -- It was the purpose of this study to investigate: (1) the present scope of vocational education and (2) the need for possible expansion of vocational education programs for students currently enrolled in the public high schools of Monongalia, Preston, and Taylor counties, West Virginia.

Method -- Data for this study were collected by: (1) personal letters and survey forms sent to county school superintendents, (2) personal conferences with high school principals and guidance counselors, (3) personal letters and survey forms sent to state supervisors of the various vocational disciplines, and (4) questionnaires administered to 1,268 public high school students in Monongalia, Preston, and Taylor counties, West Virginia.

Findings -- The following are some of the conclusions which were drawn from this study:

1. This study indicated that as enrollment in vocational courses increases, the drop-out rate declines.
2. The data revealed that the high school drop-out rate was significantly higher in schools whose graduates entered college in greater numbers.
3. Of the fourteen high schools included in this study, the vocational education offerings were as follows: one school offered courses in three vocational areas, eight schools offered work in two vocational areas, four schools offered instruction in only one vocational area, and one school offered no vocational courses.
4. During 1960 through 1965, thirty-eight per cent of the high school graduates in the tri-county area entered college and only twenty-eight per cent of all high school students in grades ten, eleven, and twelve were enrolled in vocational guidance.
5. Based upon this study, there seems to be a need for more educational and vocational guidance.
6. Of the boys surveyed, twenty-two per cent planned to enter skilled occupations and seven per cent planned to enter agriculture, forestry and fishery occupations and of the girls, twenty-seven per cent planned to enter clerical and sales occupations and fifteen per cent were planning for service occupations.
7. The male students surveyed indicated that thirty-one per cent of those not enrolled in college preparatory curricula were not enrolled in any vocational course.
8. An analysis of the data revealed that seventy-three per cent of the students surveyed desired some type of vocational education in high school.
9. Trade and industrial education was the vocational course that the most boys desired with thirty-eight per cent choosing it. Vocational agriculture was desired by twenty per cent of the boys. Of the girls surveyed, forty-three per cent desired vocational business education and twenty-six per cent desired vocational home economics.

HARVEY, KEITH M. Why Teachers of Agriculture In New York State Leave the Teaching Profession. Essay, M.Ed., 1967. Cornell University. 64 p. Department of Education, Cornell University, Ithaca, New York.

Purpose -- The primary purpose of this study was to determine why men leave the agriculture teaching profession in New York State.

Method -- The men who had studied at Cornell University during 1957 through 1962 were identified in two categories. There were 191 men still teaching agriculture and 129 men who had quit teaching agriculture during the period represented by this study.

Data for the study were obtained from the return of 94 questionnaires completed by men not teaching agriculture and 163 completed by men still teaching agriculture.

Findings -- Many of the teachers of agriculture reported having a multitude of jobs which must be carried out in relationship with agriculture teaching duties.

The agriculture teacher can expect to work with a slower learning student.

Teachers who have left teaching questioned the future of agriculture teaching.

The teachers felt that there is a shrinking farm population which led to a low number of farm boys enrolled in agriculture.

Salary did not play a major factor in a teacher's decision to leave teaching of agriculture.

HIBBS, LEROY N. Evaluation of Selected Variables in Processing Poultry Manure and of the Fertility Value of the Processed Manure. Thesis, M.S., 1967, The Pennsylvania State University. 34 p. Library, The Pennsylvania State University, University Park.

Purpose -- The objectives were (1) to evaluate selected conditioners involved in processing and storing of poultry manure in different containers and under different environmental conditions and (2) to compare the fertilizer value of the best processed poultry manure with that of other poultry manures and certain other types of fertilizers.

Method -- Manure from a flock of floor reared pullets was screened, pulverized, and divided into four parts. Hydrated lime was added to one part. Superphosphate was added to a second part, a maskant was added to a third part. The fourth part was untreated. Representative samples of each part were analyzed before and after storage for content moisture, pH, P_2O_5 and K_2O .

Bagged manure was stored for 6 months in three types of storage areas. They were (1) a heated dry indoor storage facility, (2) an open-type dirt floor shed, and (3) the poultry house from which the samples were taken.

Samples of the best poultry manure from above were applied to turf plots, alongside several unprocessed manures (slurry, sludge, ash, and droppings) and 5-10-5 liquid fertilizer. Grass was harvested from the plots and comparisons of fertility value were made.

Findings -- There was a decrease in moisture content, available phosphate content, and soluble potash content of processed manure samples during the storage period. At the end of the storage period it was found that samples containing superphosphate and lime had a reduced moisture content. Manure stored in Kraft bags contained less moisture than manure stored in vinyl-lined bags. Phosphate reinforced manure had a higher content of nitrogen than the other conditioners. Manure stored in Kraft paper bags had a higher nitrogen content than that stored in vinyl-lined bags. Manure stored in the heated indoor environment resulted in a higher nitrogen, phosphate and potash content and lower pH than the manure stored in the sheltered outdoor environment. Each of the containers was different from each of the other in terms of available phosphate content. None of the conditioners resulted in a higher soluble potash content than the control mean.

Four treatments produced a higher response in yield of lawn-grass of turf plots over the control. Treatments in order of largest increase were: droppings, litter, fertilizer, and sludge.

LAYMAN, RALPH M. The Identification of the Basic Principles of Plant and Animal Science for Inclusion in the High School Agricultural Course of Study. Paper, M.Ed., 1967, The Pennsylvania State University. 78 p. Library, The Pennsylvania State University, University Park.

Purpose -- To identify basic principles in the fields of plant and animal science, that should be understood by the students of vocational agriculture. A good teacher must have knowledge of basic physical, biological and sociological principles to get depth into his teaching.

Method -- Published materials were studied and basic principles were selected and formulated for broad areas of plant and animal science. The five areas classified were: Economic Value, Environment, Reproduction, Growth and Production, and Enemies. Supporting factual information was included for each area to aid in the understanding. The principles and factual information were reviewed by a panel of four teachers. Three of these teachers were teachers of agriculture while the fourth was a teacher of biology.

Findings -- Numerous biological science principles were common to both plant and animal science. An effort was made to confine the list to broad principles rather than to facts or laws. The review committee disagreed on inclusion of facts but not on the importance of principles.

Very little information was found identifying or explaining basic principles in certain areas of interest. The principles developed should be used by the teacher of agriculture as a guide in his teaching, not as teaching material. It appears that the inductive method of teaching is a desirable way to apply the principles.

LEWIS, WILEY B. The Evaluation of the West Virginia Agricultural Mechanics Course of Study for Vocational Agriculture Teaching as Recommended in 1964. Thesis, M.S., 1967, West Virginia University. 178 p. Library, West Virginia University, Morgantown.

Purpose -- It was the purpose of this study to evaluate the West Virginia Agricultural Mechanics Course of Study for vocational agriculture to determine: (1) whether it was being utilized, and if not, why, and (2) if it should be revised, and if so, why.

Method -- Data for this study were collected through questionnaires submitted to one hundred teachers of vocational agriculture, to the four members of the State Supervisory Staff for Vocational Agriculture and to the three members of the Teacher Education Staff at West Virginia University. Of the 107 questionnaires submitted, seventy usable forms were returned. The results were processed through the facilities of the West Virginia University Computer Center and various statistical tests were applied to the data to determine if any of the results were significant.

Findings -- The following are some of the conclusions which were drawn from this study:

1. Of the teachers responding to the questionnaire, only 37.5 per cent indicated use of the guidelines established in the recommended Course of Study in their vocational agriculture programs.

2. The major reasons identified for not utilizing the suggestions of the Course of Study in the local school's agricultural mechanics program involved variations in local conditions -- physical facilities, administrative processes and agricultural needs -- and lack of teacher competencies instead of major faults in the recommended program.

3. Teachers with a greater number of years of teaching experience used the Course of Study guidelines to a greater extent than teachers with fewer years of teaching experience.

4. The Agricultural Mechanics Course of Study should be revised to provide adequate training for off-farm agricultural occupations and to increase or decrease the amount of instructional time allocated to various areas of the agricultural mechanics program.

5. The Course of Study recommendation which states that 43 per cent of the total instructional time should be used for agricultural mechanics instruction should be retained as this percentage was considered to be about right.

6. Teachers who had taught separate agricultural mechanics classes a fewer number of years recommended that the Course of Study should not be revised while those teachers who had taught such classes a greater number of years indicated a need for revision.

7. A prepared program of agricultural mechanics should be developed based on the requirements of State Plan A as it is the more widely used class schedule option.

8. Instruction in the areas of electricity, farm power and machinery, farm structures, and soil and water management should be recommended in the regular vocational agriculture classes instead of only in the separate agricultural mechanics class.

LITWHILER, EDWARD L. An Evaluation of Cooperative Work Experience for High School Students Utilizing a Turfgrass Resource Unit. Thesis, D.Ed., 1967, The Pennsylvania State University. 94 p. Library, The Pennsylvania State University, University Park.

Purpose -- (1) To determine the learning effectiveness of cooperative work experience for high school students when associated with classroom instruction in turfgrass management, and (2) to learn if there is a difference in learning effectiveness when cooperative work experience is obtained before, during, or after a unit in turfgrass management is taught in the classroom. Additional purposes were to learn answers to the following questions: Can students with low ability enrolled in vocational agriculture classes learn as well as students with normal or above ability? Are teachers and students of vocational agriculture in Pennsylvania interested in a unit of instruction on turfgrass management?

Method -- A student's manual and a teacher's unit plan on turfgrass management were prepared to guide the classroom instruction in 27 high school departments of vocational agriculture in Pennsylvania. A list of experiences in turfgrass management to be gained through cooperative work experience and classroom instruction was given each teacher. The criterion measure used to test the hypotheses was a test consisting of 80 multiple-choice questions with four choices each. Analysis of covariance was employed to test differences in adjusted mean test scores among the three sequences of offering cooperative work experience. Correlated t-tests between pre-test and post-test scores were used to determine significance of learning for students with and without cooperative work experience.

Findings -- The presence or absence of cooperative work experience did not affect the test scores of students with equal ability. For most effective learning, work experience should follow classroom instruction. Students with normal or above ability levels made larger gains in test scores than did students with low ability. In Pennsylvania there is considerable interest among vocational agriculture high school students and their teachers to include a unit of instruction in turfgrass management in the vocational agriculture program.

LONG, JERRY W. Comparative Effectiveness of Programmed Instruction and Conventional Learning With Freshman Vocational Agriculture Students. Problem, M.S., 1967, West Virginia University. 141 p. Library, West Virginia University, Morgantown.

Purpose -- (1) To determine the effectiveness of programmed instruction by gain and post-test scores; (2) to compare programmed instruction with conventional instruction for greatest amount of retention; (3) to determine any relationship of the measurable effectiveness of programmed and conventional instruction among the more able students and those of less ability; (4) to determine the student's reactions to programmed learning; and to determine the effect of learning through programmed and conventional instruction with differing agricultural interest levels.

Method -- Data for this study were collected from twenty-seven freshman vocational agriculture students of two West Virginia junior high schools. To test the hypotheses, the results were calculated with the t test of the significance of the differences between the mean scores. Students using two different instructional modes were classified into scholastic aptitude, reading achievement, and agricultural interest high and low groups by appropriate tests. Parliamentary procedure and FFA information were the two subject areas used for the study.

Findings -- There was a significant difference at the .05 level between the raw scores of students using a programmed unit on parliamentary procedure and the same unit taught by a conventional mode. There was no significant difference between the two teaching modes concerning the retention of subject matter.

Students in the high reading achievement group had significantly greater scores with the programmed unit on FFA. However, the test results for this group on the unit dealing with parliamentary procedure indicated no significant difference between the two teaching modes. Another indication of the effectiveness of programmed instruction was evidenced by a significant difference of mean raw scores between the two teaching modes on the parliamentary procedure unit by the low reading achievement group.

Conventional instruction resulted in higher post-test scores for students who had high vocational agriculture interest. Programmed instruction also resulted in high post-test scores for several students who had little interest in vocational agriculture.

Programmed units were accepted favorably by 81 per cent of the students involved in the study. Forty-one per cent of the students indicated their desire for more programmed instruction. Although time was not precisely measured, the writer observed less time needed for completion of programmed units than the teaching time required by a conventional mode for the same subject matter content.

LONGWELL, JERRY F. An Analysis of Sheep Production Among Farmers in Armstrong County, Pennsylvania. Paper, M.Ed., The Pennsylvania State University. 39 p. Library, The Pennsylvania State University, University Park.

Purpose -- To develop a list of approved practices for the sheep enterprise, and study the relationship between selected approved practices and production factors.

Method -- A list of practices was developed from publications and successful sheep farmers. A livestock specialist selected eighteen of the most important practices to be used in the survey instrument. Eighteen farmers, all farmers within the county who owned twenty or more ewes, were interviewed for practices used and production factors achieved.

Findings -- Selecting young ewes for replacements, keeping bedding dry, providing fresh water, and using a purebred ram were practices used by all farmers interviewed. The lambing rate was positively correlated with income per ewe. Lambing mortality rate correlated negatively with income. Use of other practices resulted in somewhat higher returns.

Only one farmer dipped sheep to control external parasites. Five farmers bred ewes so that lambs were marketed in April and May and also tagged lambs immediately after birth. All other practices were used by eleven or more farmers.

LORD, CARLETON R. The Development and Evaluation of an Instrument for Appraising Written Units of Instruction. Thesis, M.S., 1967, The Pennsylvania State University. 58 p. Library, The Pennsylvania State University, University Park.

Purpose -- To develop and test the effectiveness of an evaluation instrument which would assist teachers to select desirable written units of instruction.

Method -- Criterion measures for evaluating written units of instruction were selected from an extensive review of literature and from seminars of teachers of agriculture. These criterion measures were sent to nine authorities in the field of vocational agriculture publications in nine different states. These persons were asked to weigh the criterion measures numerically as to relative importance on a scale from zero to one hundred. Total score for all criterion measures was to equal one hundred points. The ratings were averaged to develop an evaluation instrument.

Six written units of instruction of three types were selected: (1) subject matter and teacher information bound separately, (2) subject matter and teacher information bound together, and (3) subject matter only. Each unit was evaluated by sixty teachers of agriculture without and with the evaluation instrument.

Findings -- An evaluation instrument was developed with three major headings: (1) Subject Matter, 60 points; (2) Teacher Aids and Information, 30 points; and (3) Mechanical Make-up, 10 points. The unit scores were more objective when evaluated with the evaluation instrument as scores did not range as widely with it. Of the three types of units, subject matter and teacher information bound separately scored highest; subject matter only units scored lowest.

Teacher evaluation scores were influenced by the size of the unit and were not influenced by color both with and without an evaluation instrument. Teacher evaluation scores were not influenced by pictures or illustrations with an evaluation instrument, but were influenced in some cases without an evaluation instrument.

The evaluation instrument was helpful in selecting written units of instruction. Use of the instrument resulted in a significant change in the score assigned to three of six written units of instruction evaluated by teachers. Without the instrument, teachers overrated a unit which was composed largely of subject matter. They also overrated a unit which had been commercially prepared and colorfully illustrated.

LOVE, GENE M. and CURTIS, SAMUEL M. Educational Effectiveness of Two Sequences of Scheduling Classes and of Two Techniques of Teaching an Off-Campus In-Service Teacher Education Course. Staff Study, 1967. Agricultural Experiment Station Progress Report, Department of Agricultural Education. The Pennsylvania State University, University Park.

Purpose -- To compare the educational effectiveness of three-day summer workshops with a series of weekly classes taught during the regular school year and to compare the effectiveness of teacher-centered and student-centered teaching technique for in-service teacher education.

Methods -- The students were teachers of agriculture enrolled in in-service teacher education classes. The subject matter was dairy nutrition. A 2 x 2 factorial design was employed to facilitate the comparison between class sequences and between teaching methods in this replicated study. A fifty item multiple choice test was the criterion measure. Students in replication I were retested six months after the conclusion of the course.

In the teacher-centered classes, instruction was planned and presented by the course instructor; in the student-centered classes, instruction was planned by the instructor and the students. Committees of students (teachers) were responsible for teaching each of the four problem areas. The weekly classes consisted of six, two and one-half hour class sessions conducted at regular intervals during the school term. The three day workshops consisted of fifteen hours of instruction on three consecutive days during the summer. Analysis of covariance was used to test for student differences resulting from teaching method and/or scheduling sequence.

Findings -- Test scores of students in the three-day summer workshop were significantly higher than the scores of students in the weekly class sequence. When retested six months later (replication one only), there were no significant differences in student test scores among the class scheduling sequences. There were no significant test or retest score differences between teaching methods in either replication one or two.

It was concluded that for in-service education courses for teachers of agriculture, other factors such as convenience were more important than the alternative scheduling sequences tested. This study did not determine whether teacher-centered or student-centered instructional methods were more effective for teaching off-campus in-service teacher education classes.

McCLAY, DAVID R. Pre-Employment Experiences of Graduates on Agricultural Education Related to Success in College and Tenure in Teaching. Staff Study, Teacher Education Research Series, Volume 8, Number 4, 1967; The Pennsylvania State University. 12 p. Department of Agricultural Education, The Pennsylvania State University, University Park.

Purpose -- To relate pre-college education and experience to college performance and tenure in teaching of graduates from 1954 to 1964 and to make comparisons with generalizations common to earlier studies in 1933, 1943, and 1960.

Method -- Three hundred twenty eight (86 per cent) of the 382 graduates of the 1954-1964 decade returned completed questionnaires. Some data for the total group were obtained from University transcripts.

Findings -- (1) A lower percentage of the 1954-1964 graduates entered teaching (65 per cent) than did graduates of earlier periods; (2) The presence or absence of an agricultural background had no effect on whether or not the graduate entered teaching; (3) A majority of the graduates (59 per cent) had decided to prepare for teaching before entering college; (4) Graduates who completed other than agricultural curricula in high school completed nearly twice as many mathematics courses in high school as did graduates who had enrolled in agriculture. No relationship was found between years of high school mathematics completed and grade point average at college graduation; (5) High school fifth correlation with grade point average at college graduation was significant at the .01 level.

The 136 teachers whose total employment was in teaching since college graduation showed certain positive relationships significant at the .01 level. These were: Years of farm experience with enrollment in agriculture in high school and high school fifth at graduation; Years of high school mathematics completed with years of high school science completed; High school fifth at graduation with all-University average at graduation. Negative correlations at the .01 level were found as follows: Years of farm experience with years of high school mathematics completed; Years of high school agriculture completed with years of high school mathematics and science courses completed; Years of high school mathematics completed with an early decision to teach and high school fifth at graduation. It was concluded that success of students in high school is related to success in college.

MICHAEL, DAYTON J. Considerations Pertaining to An Outdoor Recreation Program in Marion County. Thesis, M.S., 1966, West Virginia University. 84 p. Library, West Virginia University, Morgantown.

Purpose -- (1) To determine what facilities were present for outdoor recreational needs; (2) to determine the extent of participation in outdoor recreational activities of high school seniors and their families in and out of Marion County; and (3) to make recommendations based on the findings.

Method -- Data for this study were collected by two questionnaires administered to 907 high school seniors; one questionnaire was administered to teachers in Marion County Schools; one questionnaire in regard to inventory, classification, and evaluation was compiled by a recreation committee with the writer having served as chairman; and data on forty-one playgrounds were obtained by personal interview with playground directors.

Findings -- The following is a list of the areas and some findings: Private Recreation areas -- (1) The land area for recreational use was approximately nine times as great as the water area; (2) Picnic tables and parking spaces were the most numerous items; (3) July and August were the months having the highest percentage of total attendance; (4) Motor boating and golf ranked first in participation. Public Recreation Areas -- (1) The land area for recreational use was approximately thirteen times as great as the water area; (2) Picnic tables, tent and parking spaces were the most prevalent facilities; (3) June, July, August, and September were the months having the highest percentage of total attendance; (4) Playing games and sports ranked first in participation. Recreational Items Used By High School Seniors and Their Families -- (1) Automobiles, cameras, and swim suits were the most widely used items for recreation; (2) Tennis courts were least used; (3) Stamp collecting and knitting were the most popular hobbies; (4) Folk songs, scuba diving, and ceramics were the least popular hobbies. Outdoor Recreational Activities Pertaining to the School System -- (1) The fifty-seven schools had a total of 66.11 acres of playground area; (2) There were approximately 195 students per acre of playground area; (3) Basketball courts, softball fields, and gymnasiums were found in the greatest number; (4) Only three schools had a supervised recreational program for youth after school hours. Marion County Recreation Commission and The Fairmont Playground Association -- (1) Forty-one playgrounds were operated for youth during the summer months of 1966; (2) The total playground area under supervision was 99.5 acres or an average of 2.42 acres per playground; (3) The largest playground had twenty-seven acres while fourteen playgrounds had .5 acre of playground area per playground. Recommendations Based Upon the Findings -- (1) A year-round outdoor recreational program should be developed to provide a choice of many different activities to serve all ages; (2) An outdoor recreational program should encourage family group participation; (3) Existing facilities should be utilized to the fullest extent; (4) Existing activities should be coordinated to eliminate overlapping; (5) Public and private recreational areas should provide a wide range of individual choices in different types of recreation.

NORTON, ROBERT E. Using Programmed Instruction With and Without Self-Instructional Practice to Teach Psychomotor Skills. Ph.D. Thesis, 1967, Cornell University. 63 p. Library, Cornell University, Ithaca, New York.

Purpose -- Three problems of general concern were investigated by this study: (1) Can programs alone effectively teach certain psychomotor skills to high school vocational students? (2) What is the relationship between student dexterity and ability to learn a skill effectively from programmed materials? (3) Can programmed material be supplemented with another method and/or medium to increase their effectiveness? The main purpose of the study was to experimentally test the following theory which was derived from the learning principles of apperception and transfer, previous research on programmed instruction, and learning in the psychomotor domain: Programmed instruction can satisfactorily teach those psychomotor tasks which primarily require the learning of cognitive knowledge in order to properly utilize motor skills the learner already possesses.

Method -- From the theory and general problems of concern, eight hypotheses were formulated for testing. The programmed unit selected was designed to teach a relatively complex psychomotor task, the regrinding of worn steel drills. A specially devised dexterity test was developed and administered to all subjects. Similarly, a set of written instructions for self-instructional practice was developed.

Students chosen for the experiment were tenth grade vocational agriculture students from twenty-one New York schools, selected on the cluster sampling basis. Intact classes were randomly assigned to one of two treatments: programmed instruction only and programmed instruction plus fifteen minutes of self-instructional practice. At the end of the instructional period, all students were given a fifteen minute performance test, the product of which was evaluated as the criterion measure.

The major analyses used on the data consisted of two two-way analyses of covariance with control on reading. They were computed to test differences between treatments, differences among three dexterity levels, and to check for hypothesized interactions.

Findings -- The data collected in this experiment failed to support the theory that "programmed instruction can teach satisfactorily those psychomotor tasks which primarily require the learning of cognitive knowledge in order to properly utilize motor skills the learner already possesses." Likewise the method used to supplement the programmed instructional materials in this study, the self-instructional practice, did not produce any significant benefit over use of the program alone. However, the findings of this experiment clearly indicated that a significant relationship existed between student dexterity and ability to learn psychomotor skills effectively through use of programmed materials.

PAULES, JACKIE H. An Analysis of Competencies Needed in Occupations in the Processing and Marketing of Dairy Products. Thesis, M.S., 1966, The Pennsylvania State University. 79 p. Library, The Pennsylvania State University, University Park.

Purpose -- The objectives were: (1) to identify and determine commonalities among occupational titles for entry and advancement in employment in dairy processing plants, (2) to identify, rate, and group the competencies needed To Enter and To Advance, and (3) to determine differences in levels of competency needed by employees To Enter and To Advance in each occupational group in dairy processing plants.

Method -- An interview schedule was used to determine ratings of agricultural, business, and trade and industrial competencies needed by employees in fifteen occupational titles. Data were collected by interviews with plant managers and/or personnel managers in seven dairy processing plants in Allegheny County, Pennsylvania. The plants were large enough to have employees in all of fifteen occupational titles.

Findings -- Factor analysis indicated that there were meaningful occupational title groups at both the To Enter and the To Advance level. The groups that factored at the To Enter level were: salesman, technician, plant worker (mechanic), office worker, personnel manager, plant worker, and supervisor. Sales manager, technician, plant worker (mechanic), office worker, salesman, supervisor, and plant processor were groups of titles which factored in the To Advance data. Salesman, technician, plant worker (mechanic), office worker, and supervisor were occupational title groups at both levels.

Factor analysis indicated that there were meaningful groups of competencies required of employees To Enter and To Advance in dairy processing plants. The competency factors at both levels were personnel relations, milk production technology, processing (mechanics and maintenance), office services, sales management and salesmanship, and milk processing technology.

Competency factor scores were computed to determine differences in degree of competency needed To Enter and To Advance. The competency needed To Advance was higher than To Enter for all occupational groups. The competency factors, milk processing technology and sales management and salesmanship represented the largest number of increases at the To Advance level.

A baccalaureate degree was most desirable for managerial occupational titles (except sales manager) and for fieldmen and quality control technicians. Other occupational titles required either high school graduation or a post-high school technical education. Except for fieldmen, administrators placed little emphasis on experience background when considering prospective employees. Five of seven administrators said that a farm background is desirable for the fieldman. On-the-job training in the plant was the most widely used type of in-service education. Courses offered by agricultural colleges and public schools (adult education) were also important sources of in-service education. It was recommended that agriculture departments in high schools and area vocational-technical schools consider the development of educational programs for employees in dairy processing plants. Such programs should include sales management and salesmanship and milk processing technology.

PERRY, BOBBY G. Relationship of Enrollees' Participation in Course Conduct to their Opinions of Selected Aspects of the Classes in the National Young Farmer Study. Thesis, M.S., 1967, University of Maryland. 95 p. Library, University of Maryland, College Park.

Purpose -- To determine if there was a relationship between class organization, the frequency of officer-conducted business meetings, and student responsibility to: (1) young farmers' opinions of the value of the instructional program, and (2) the values the young farmers placed on social and recreational activities held in combination with the instructional meeting.

Method -- Data used in this study were from schedules of the National Young Farmer Study completed by teachers and enrollees in established pilot centers. Only those schedules that were concerned with the organization and operation of the young farmer programs in the pilot centers during 1960-61 were used in this report.

The data were analyzed by the chi-square test of independence and contingency tables of the young farmers' opinions of the program.

Findings -- (1) Young farmers' opinions of the instructional program and social and recreational activities were significantly dependent on class responsibility, class participation, and student responsibility.

(2) There was more interest in the program when business meetings were conducted at most, but not all, of the instructional meetings.

(3) The greatest satisfaction with the number of instructional meetings was found when the major decisions were made by the class with guidance from the teacher, officers, and committees.

(4) Young farmers were more effective in identifying specific practices for adoption on the home farm and were more satisfied with class meetings devoted to farm practices when major decisions were made by the class with guidance from the teacher, officers, and committees.

(5) Social and recreational activities were found to be an important part of the young farmer program, and tended to increase in importance with the increase in officer-conducted business meetings.

POPE, JAMES L. Auditory Assistance to Written Achievement Tests for Poor Readers. Thesis, M.S., 1967, University of Maryland. 73 p. Library, University of Maryland, College Park.

Purpose -- (1) To determine whether there was significant improvement in test achievement of poor readers when these students used auditory assistance while taking objective pencil and paper tests and (2) To determine whether the use of auditory assistance in taking tests would result in improvement in students' concepts of themselves.

Method -- The population was sixty-six horticulture students of the Gaithersburg High School, Gaithersburg, Maryland. The students were identified as class A, B or C and each class was categorized into poor or able readers by use of reading achievement and IQ tests.

Data were gathered from ten classroom unit tests administered between November 25, 1965 and April 1, 1966. The experimental situation was established; each student used auditory assistance when taking five unit tests. These same students served in the control situation when five additional tests were administered to them without auditory assistance. Two separate rotations were employed during the study.

The Self Concept As A Learner Scale was used to obtain measures of change in self concept of students during the interval of the study.

All data were treated statistically by the use of a t-test for differences between means of the experimental and control groups. Differences were considered to be significant at the .05 level.

Findings -- (1) There was not a significant difference in achievement of poor readers who used auditory assistance of taped tests to take classroom unit tests and those who did not.

(2) Improvement in pupils- self concept did not significantly change when auditory assistance of taped tests was used with achievement tests.

The dual conclusions are that there is no advantage to using auditory assistance to help poor readers' performance on pencil and paper tests, and poor readers do not have a better concept of themselves as a result of using auditory assistance on a test.

RAWSON, RICHARD A. Determination of Farming Entry Opportunities Available Annually to Young Men in Centre County, Pennsylvania. Paper, M.Ed., 1967, The Pennsylvania State University. 40 p. Library, The Pennsylvania State University, University Park.

Purpose -- To determine the number of entry opportunities in farming in Centre County, Pennsylvania, in 1964 and to predict the number for each occupational level by type of farming in the county annually from 1965 to 1970. A second purpose was to compare two sources of information. A further purpose was to determine the number of 1950, 1952, 1954, 1956, 1958, and 1960 high school graduates who were enrolled in agriculture in their senior year and who entered farming, the percentage of the total agriculture graduates they represented, and the type and status level at which the young men entered farming.

Method -- A survey of 16 selected farmers in the county was made to determine the number of actual entries in farming during 1964. A second sample survey of 60 farmers according to a list maintained by the County Agricultural Stabilization and Conservation Service was completed to gather data needed to predict the total annual average number of entry opportunities in farming. The sample data were then divided according to type of farm and ownership status level of the operator for estimating the number of entry opportunities in farming between 1965 and 1970. The U. S. Census of Agriculture was also used as a source of information for predicting the annual number of entry opportunities available in the county between 1965 and 1970. A formula developed by Iowa State University was used in the calculation of all predictions.

Findings -- The results showed a total of 30 young men who entered farming in the county during 1964. The average annual number of entry opportunities predicted in farming for each year between 1965 and 1970 was 6.30 men. The number of entry opportunities predicted using the U. S. Census of Agriculture was 10.55 men each year. The average number of Centre County agriculture graduates during the years 1950, 1952, 1954, 1956, 1958, and 1960 who entered farming was 14.1 men. There were entry opportunities in farming for each agriculture graduate who desired this type of employment. The Iowa formula predictions using data from the U. S. Census of Agriculture were higher than the number predicted using the survey data. However, the U. S. Census of Agriculture predictions were conservative in estimating the number of entry opportunities when this number was compared to the number who actually entered farming in selected previous years.

ROBERTSON, ALAN G., ANNIS, WILLIAM H., WOLFF, FRANK. Guidelines for Evaluating Secondary Vocational Programs in Ornamental Horticulture. Interstate Cooperative Study, 1966, New York State Department of Education. 24 p. Office of Research and Evaluation, New York State Department of Education, Albany, or Agricultural Education, College of Agriculture, University of New Hampshire, Durham.

Purpose -- To develop guidelines which would assist teachers and administrators in (1) planning for organizing horticultural programs; (2) evaluating the on-going horticultural program and (3) utilizing the results of horticultural program evaluation.

Method -- The conference method was used to gather data from teachers of agriculture in New York, New Hampshire, Maine, and Massachusetts. Assistance was also provided by the professors of Plant Science in the College of Agriculture and Thompson School of Applied Science at the University of New Hampshire.

Findings -- These conferences resulted in the development of a series of guidelines for the planning stages of a secondary horticultural program; the evaluation of an on-going program; and the utilization of the results of the evaluation in further program development.

Using the subject matter of horticulture as a base, administration, facilities, and pedagogical development of this area of Vocational Agriculture are stressed.

ROBINSON, WILLIAM A. Agriculture Interest Score and Other Characteristics of Eighth Grade Boys Related to High School Graduation Major and Employment. Thesis, D.Ed., 1967, The Pennsylvania State University. 99 p. Library, The Pennsylvania State University, University Park.

Purpose -- (1) To determine differences and relationships among eighth grade Vocational Agriculture Interest Inventory score, socio-economic factors, class fifth, and high school graduation major and occupational area of employment two years after graduation, (2) to ascertain present practices of high school business education and agriculture departments in providing improved and expanded instruction through supporting education, team teaching and other innovations.

Method -- The total sample group included 1207 male students in twenty rural south-central Pennsylvania high schools who were enrolled in eighth grade in the spring of 1960. Subsequently 134 moved from the school patronage area and 8 died; therefore, complete data were obtained for 1065 students. Data were obtained from student permanent records and from interviews with principals, counselors, teachers, and students. The statistical treatments of single classification analysis of variance and chi square were employed to test the hypotheses.

Findings -- (1) Students of normal age for their grade level tended to graduate; (2) boys who lived in urban or town locations had a greater tendency to graduate; (3) there was some association between employment area of father and the son's subsequent graduation or withdrawal from school; (4) students whose fathers' employment levels were classified as professional and business manager or owner were more likely to graduate; (5) students who expressed interest in college or advanced training tended to graduate; (6) the students who graduated in agriculture had higher Vocational Agriculture Interest Inventory scores than did students who graduated in other curricula; therefore, the Vocational Agriculture Interest Inventory was a valid instrument used in the guidance and selection process in the twenty schools; (7) graduates and non-graduates employed in farming had higher agriculture interest scores than students who entered any other area of employment; therefore, the Vocational Agriculture Interest Inventory was a valid instrument in predicting a student's employment in farming six years after enrollment in eighth grade.

Supporting education and team teaching concepts were not in evidence in the twenty schools. Innovations in business education included plans for training key punch operators and dictation transcription training through new equipment. Innovations in agricultural education included the teaching of agri-business units of instruction, placement for occupational work experience in agri-business, the teaching of ornamental horticulture units of instruction, and the provision for elective courses in ornamental horticulture and agricultural technology.

SANDERSON, CARROLL. Follow-up Study of Former Students of MDTA Programs in New Hampshire. Paper, M.S., 1967, Agricultural Education. 20 p. Agricultural Education, College of Agriculture, University of New Hampshire, Durham.

Purpose -- To determine the effect of Manpower Development and Training Courses on trainees completing programs in New Hampshire.

Method -- A mailed questionnaire was utilized to collect the data. The sample consisted of 267 former students in the following categories: 62 machine operators (metal trades); 81 machine stitchers (boot and shoe industry); 10 clerk stenographers; 21 clerk typists. The response of all groups combined, 174 respondents, was 65 percent.

The respondents' completed questionnaires were evaluated on the basis of (1) education before training; (2) job history since training; (3) type of employment; and, (4) number of raises.

Findings -- The machine operators reported the most success in obtaining work in their training area. The machine stitchers and the clerical occupations indicated less success in obtaining and keeping employment due to responsibilities for growing children that necessitated employment close to home and procurement of baby sitters.

The more formal education a person had the easier it was for him to get and hold positions. Of the 174 respondents, 94 were employed in their training field or a closely related field. Thirty-eight indicated they were employed in areas not related to their training. Only thirty-three were unemployed at the time of the survey.

SCANLON, JAMES A. The Relative Effectiveness of Supplementing Programmed Instruction With Blocked Versus Spaced Review. Dissertation, Ph.D., 1967, Cornell University. 104 p. Library, Cornell University, Ithaca, New York.

Purpose -- To determine the relative effectiveness of supplementing programmed instruction with blocked versus spaced review.

Method -- Students enrolled in first- year vocational agriculture in twenty-seven New York schools, selected at random, made up the sample. These students were first tested for reading ability, then intact classes were randomly assigned to one of three treatment groups using a procedure which insured groups of approximately equal mean reading ability. These treatment groups were: Group 1 -- program plus blocked review; Group 2 -- program plus spaced review; and Group 3 -- program only. Review was provided by a filmstrip made especially for use in the experiment. The group having spaced review completed one segment of the program, then had a review of that segment by viewing the corresponding segment of the filmstrip. This pattern was continued until the instructional period was over. The group having blocked review completed the entire program, then viewed the entire review filmstrip. The group having program only did not view the filmstrip.

All students were tested for learning at the end of the instructional period using an objective type paper-pencil test constructed by the writer. They were re-tested for retention after a thirty-day interval. Complete sets of data, which were made up of a reading test score, a learning test score, and a retention test score, were collected on 279 students of which 228 were ninth graders and 51 were tenth graders. The data were analyzed by two one-way analyses of covariance, the first being run on learning test scores adjusted for variations in reading score, and the second on retention test scores adjusted for variations in reading score. The .05 level of probability was used to determine if significant differences existed.

Findings -- With regard to learning, the adjusted mean scores for the three groups were: Group 1 -- 52.5, Group 2 -- 47.8, and Group 3 -- 49.8. The data analyses showed no significant differences between Group 1 and Group 3 and between Group 2 and Group 3. There was a significant difference between Group 1 and Group 2 with the mean of Group 1 being significantly higher.

With regard to retention, the adjusted mean scores for the three groups were: Group 1 -- 49.1, Group 2 -- 47.3, and Group 3 -- 49.9. There was no significant difference between any of these means.

SEEFELDT, ROBERT A. An Analysis of Factors That Discriminated in the Selection of Superior FFA Chapters for Entry in the National Chapter Award Contest in 1966. Thesis, M.S., 1967, University of Maryland. 189 p. Library, University of Maryland, College Park.

Purpose -- (1) To determine which standards found on the National Chapter Award Application Form discriminated in the selection of Superior Chapters that were entered in the 1966 National FFA Chapter Award Contest and (2) to determine the relationship of chapter size to entry in the National Contest.

Method -- The data were taken from 140 application forms. The quality and appropriateness values for the standards requesting a descriptive response were obtained by sending an instrument for ranking activities to the thirty-two judges who selected the Superior Chapters that were entered in the 1966 National Chapter Award Contest.

Findings -- Analysis of the data recorded on the application forms for entry into the National Chapter Contest resulted in the following findings:

1. There were no significant differences in the rate of completion for two-thirds of the standards.
2. Standards requiring a subjective description were highly discriminatory.
3. Standards requesting membership participation were highly discriminatory.
4. Membership size had limited influence in the selection of chapters that were entered in the National Contest.
5. Several chapters achieved a Superior rating while completing less than 50.0 per cent of the standards.
6. There was a lack of neatness in the chapter applications not selected for entry.

SEILER, GERALD H. Identification and Classification of Skills Needed by Employees in Turfgrass Occupations. Paper, M.Ed., 1967, The Pennsylvania State University. 61 p. Library, The Pennsylvania State University, University Park.

Purpose -- The major purpose was to identify the skills needed by employees in turfgrass occupations and to determine which of these skills employers felt could be taught to agriculture students in high school. In addition, job titles according to the skills needed, skills employers felt should be taught in post-high school programs, and skills employers would be willing to teach to students in a directed occupational experience program were identified.

Method -- A list of skills and competencies required for employment in the turfgrass industry was developed. The list was presented during personal interviews with eleven golf course, athletic field, and park superintendents. Superintendents were asked to check whether each skill was necessary, desirable, or unnecessary to enter five suggested job titles. They also checked where the skill or competency could be taught. The alternatives for programs in which the skills could be taught were: high school agriculture courses, post-high school courses in vocational-technical schools or non-baccalaureate college programs, and directed occupational experience.

Findings -- Analysis of the responses made by the superintendents showed that most of the skills and competencies listed were necessary to enter the supervisory positions. For seasonal jobs at the entry level, most skills and competencies were unnecessary.

Directed occupational experience should be an important part of high school courses teaching turfgrass establishment and maintenance skills.

STEVENS, GLENN Z. Graduate Education and Eligibility for Sabbatical Leave of Teachers of Agriculture in Pennsylvania. Staff Study, 1966, The Pennsylvania State University. 12 p. Teacher Education Research Series, Volume 7, Number 4, Department of Agricultural Education.

Purpose -- To determine advanced degree status and plans, eligibility for sabbatical leave, graduate credits earned above the bachelors degree, certification, and subject matter areas of specialization of teachers of agriculture and area advisers of agricultural education. Compariaons were made with data from a similar study five years earlier and with statistics for all secondary teachers in Pennsylvania.

Method -- With cooperation of the Department of Public Instruction, Bureau of Technical and Continuing Education, Agricultural Education Division, a data schedule was completed by 18 area agricultural education advisers and the 283 teachers of agriculture employed in 230 high schools in Pennsylvania near the end of the 1965-66 school year.

Findings -- The bachelors degrees of 258 teachers of agriculture and 14 area advisers were earned in Agricultural Education. Twenty teachers and four area advisers majored in other specializations in agriculture. The remaining five teachers hold first degrees in related fields. The bachelors degrees of 267 teachers and 14 area advisers were from the Pennsylvania State University. Five earned the degree at West Virginia University and four at the University of Maryland.

Masters degrees have been completed by 127 teachers and 13 area advisers; eighty per cent of the men earning the degree at Penn State in Agricultural Education. Twenty-five teachers have a masters equivalent certificate issued by the State Department of Public Instruction, of whom five are candidates for a masters degree. Sixty-nine other teachers are active candidates for a masters degree, mostly younger men.

Only 18 teachers have taken advantage of the provisions of the School Code that make professional employees eligible for sabbatical leave at half salary after ten years of teaching. There were 140 teachers of agriculture eligible for a sabbatical leave in 1966 who did not take it. About 16 more teachers will become eligible in each of the next nine years. Some will specialize in a subject field, in administration or guidance, while others work in a related industry or in another country. Many should earn an advanced degree and return to the schools from which they are on leave.

There are but 14 teachers who have secondary principal certification and seven are qualified in guidance. Seven teachers and four area advisers have vocational director certification. a fourth of the teachers and advisers declared that they have competency specialization in dairying, agricultural mechanics or agronomy. Sixty-nine teachers named more than one area of special ability but 89 teachers listed none. Eight area advisers would instruct groups of teachers in inservice classes in one or more special subjects.

STILES, PHILIP G., W. HOWARD MARTIN, RICHARD LALLEY. Curriculum in Food Handling and Distribution. Non-Thesis study. May, 1967. University of Connecticut. 158 p. College of Agriculture, University of Connecticut, Storrs.

Purpose -- To determine employee opportunities and educational requirements in food handling and distribution for Connecticut and to relate these data to programs of vocational education.

Method -- Personal interviews were conducted with food store employees, managers and others. Curricula were obtained from many institutions offering programs in food distribution.

Findings -- 889 full-time and 3780 part-time openings were reported by six managers of food store chains. Personnel interviewed were generally satisfied with their occupational opportunities. The average schooling was 11.5 years. Nearly 90% of store managers began their careers as part-time employees while in high school. The personnel interviewed indicated a need for food related courses in the vocational curricula. On-the-job training, sanitation, business management, food retailing, food quality and food distribution were work or course areas recommended.

Curricula were suggested for secondary and post secondary institutions. The study also includes some detail curriculum suggestions of value to schools wishing to begin a program in food handling and distribution.

TENNEY, RICHARD W. The Influence of the International Farm Youth Exchange Experience on the Educational Achievement and Occupational Choice of the United States Delegates. Thesis, M.Ed., 1967, The Pennsylvania State University. 97 p. Library, The Pennsylvania State University, University Park.

Purpose -- (1) To determine the influence that the six months foreign rural family living experience of the International Farm Youth Exchange program had on the educational achievement and occupational plans of the IFYE participants and (2) to determine the IFYE program trends as reflected by the IFYE Alumni.

Method -- A schedule was developed to secure information relating to demographic factors, educational achievement and occupations. The schedule was mailed to 570 IFYE Alumni and to 94 national IFYE applicants who had not become program participants with 480 and 68 schedules returned, respectively, from the two groups. The alumni respondents were placed into three groups according to their year of application. The groups were: Alumni I - 1948-53; Alumni II - 1954-59; and Alumni III - 1960-65. The three alumni groups were used to determine the program trends. Alumni Group III and the national applicants who had not become program participants were used as the two groups to determine the IFYE influence on educational achievement and occupational plans.

Findings -- The IFYE experience was found to be associated with the following: (1) a higher rate and intensity of community participation using the Chapin Community Participation Scale; (2) a greater orientation of occupations towards working with people; (3) a higher proportion of occupations relating to international activities; (4) a higher rate of involvement in activities of the on-going IFYE program; (5) a higher rate of involvement in activities of the county level and state level Cooperative Extension Service; and (6) a higher rating of the influence of the IFYE program on both educational level and occupations.

The Alumni of the IFYE experience were also found to have achieved a high level of education and to be people who moved at a rate well above that of the nation.

The rate of participation by alumni in alumni and extension activities, the rating of influence of IFYE on education and occupations, and the community participation score, all appear to be associated with the number of years since the IFYE experience. (1) The alumni in the 1948-53 group had higher community participation scores and had attended a greater number of national conferences. (2) The alumni in the 1960-65 group rated the influence of IFYE higher on both education and occupations. (3) The alumni in the 1960-65 group had a higher percentage of participation in activities of the on-going IFYE program and of the Cooperative Extension Service.

TOWNE, DOUGLAS C. Influences Exerted Upon Subject Responses By the Response Scale Structural Elements of Attitude Scales. Thesis, Ph.D., 1967, Cornell University, 143 p. Library, Cornell University, Ithaca, New York.

Purpose -- The problem investigated in this experimental study was the possible influences upon responses made by subjects reacting to Osgood and Likert attitude measurement devices with response scales presented in various ways. It was considered that various structural elements, of which a response scale is constructed, might possibly exert pressure upon the subject to respond in specific ways.

Method -- An operational framework was developed within which three operational definitions of influence were incorporated. The first definition concerned influence which exerts pressure in a uniform direction along the response scale. This influence was described as "uni-directional influence." The second definition concerned influence of a bi-directional nature, i.e., influence which exerts pressure differently on one half of a scale than on the other half. The third definition described the lack of influence.

The experimental procedures consisted of a $2 \times 2 \times 2 \times 2 \times 3 \times 8$ factorial design. Two alternatives for each of four structural elements (origin of endpoint, width between endpoints, directionality of scale division labels and bias of scale division labels) provided for 16 instruments each of which consisted of 1 alternative of a structural element combined with each alternative of the remaining three elements. Each instrument consisted of one of these response scales applied to 18 ideas, 9 of which were presented in the Osgood manner and the other 9 in the Likert manner. Only three of each of the nine ideas were used for experimental purposes. The three ideas in each technique consisted of a positive, neutral and negative idea. Each instrument was then administered to four subjects within each of eight different groups. The eight groups of subjects consisted of fifth, seventh, eighth and ninth grade level students in a public school, students in a freshman psychology course, volunteer firemen and firemen's auxiliary members, businessmen and secretaries, and public school teachers. The sample, therefore, consisted of 512 subjects, each reacting to 18 ideas (only 6 of which were used for experimental purposes) presented with one of the 16 response scales.

The data were analyzed with an orthogonal comparison of means to test the gross effects of the four structural elements and a factorial analysis of variance to identify interactions. In addition to this, identification of personal qualities such as body laterality, sex, educational experience and math experience were incorporated and explored for possible interaction effects.

Findings -- The findings of the study indicated no gross differences between the two alternatives for each of the structural elements. The structural element of width resulted in the greatest difference but this was significant in the more powerful orthogonal comparison of means at only the .15 level. In the secondary analysis which involved the factorial analysis of variance, the major differences were attributable to differences between the eight groups and between the three ideas. The structural element of width was found to exert influence of the bi-directional type. Several interactions were identified but none were considered to be of any great magnitude.

In summary, it was found that for the most part various alternatives of the response scale structural elements do not influence the responses of subjects in the Likert or Osgood attitude measurement devices.

VIA, BOBBY E. Home Farm Shop, Type and Facilities Based on Number and Kind of Shop Jobs Performed or to be Performed on Farms. Problem, M.S., 1967, West Virginia University. 30 p. Library, West Virginia University, Morgantown.

Purposes -- (1) To determine the need of a farm shop or to improve the present facilities; (2) to determine if farm income could be increased if one were to perform his own farm mechanics jobs; (3) to determine if a need is present for training in farm mechanics provided through vocational agriculture departments; (4) to determine the type of shop jobs done in situations having adequate farm shops and facilities.

Method -- (1) A topic was selected; (2) an outline of the study was made; (3) discussions were held with three vocational agriculture teachers of Monroe County, West Virginia; (4) literature was reviewed from books, magazines and bulletins; (5) fifty interviews were held with farmers in Monroe County, West Virginia; (6) information recorded; (7) visits were made to farm shops in Monroe County.

Findings -- (1) Farmers of Monroe County need a shop; (2) a farm shop of adequate size can be built for approximately twenty-five hundred dollars; (3) a farm shop should be at least seven hundred square feet; (4) farmers can perform their own shop jobs with an average saving of two hundred dollars per year; (5) farmers desire training in farm mechanics through the vocational agriculture departments.

WICKS, LYLE L. A Manual for Teaching Financial Management to High School Agricultural Classes and Young Farmer Groups. Thesis, M.S., 1967. Cornell University. 181 p. Division of Agricultural Education, Cornell University, Ithaca, New York.

Purpose -- The purpose of the study was to provide a manual to serve as a source of information about agricultural finance and to suggest experiences which would better enable agriculture students to make sound financial management decisions.

Method -- A committee composed of agriculture teachers, teacher educators and farm credit specialists was asked to make recommendations concerning the format and subject matter content of the manual. Based on these suggestions, the initial draft of the manual was prepared. The committee, acting as a jury, reviewed the material and made recommendations for revision. Based on majority opinion, revisions were made and the material prepared for publication.

Findings -- As a result of the study, a manual was prepared for use in teaching agricultural finance to high school agriculture students and out-of-school groups. Each of the seven chapters considered a subject matter area of importance to an understanding of financial management procedures. The content of the manual was kept at the minimum deemed necessary for acquiring a working knowledge of financial practices.

It was recommended that the manual be made available to high school agriculture teachers, extension agents and other agencies and individuals serving producers of agricultural products.

It was further recommended that teachers be encouraged to develop problems and opportunities for experience appropriate to the types of agriculture found in the area.